BS ISO 16556:2014

BSI Standards Publication

Large yachts — Deck equipment — Anchoring equipments

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National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Grands yachts — Équipement de pont — Mouillage

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Foreword

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 8, *Ships and marine technology*, Subcommittee SC 12, *Large yachts*.

INTERNATIONAL STANDARD **ISO 16556:2014(E)**

Large yachts — Deck equipment — Anchoring equipments

1 Scope

This International Standard defines the requirements for layout, design, and installation for large yacht anchoring equipment.

For the purpose of this International Standard, large yachts are of L_H (as defined according to ISO 8666:2002) equal to or longer than 24 m, in use for sport or pleasure and commercial operations.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1704, *Ships and marine technology — Stud-link anchor chains*

ISO 3828, *Shipbuilding and marine structures — Deck machinery — Vocabulary and symbols*

ISO 4568, *Shipbuilding — Sea-going vessels — Windlasses and anchor capstans*

ISO 7825, *Shipbuilding — Deck machinery — General requirements*

ISO 8666:2002, *Small craft — Principal data*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3828 and the following apply.

3.1
working load of the windlass
F_W
working load, derived from the chain cable diameter and the chain cable grade, measured at the cable lifter

3.2
nominal size of the windlass
NS_W
size expressed in terms of chain cable diameter, in millimetres, grade of chain cable, and pull capability

EXAMPLE 100/3/25 is the size designation of a windlass for 100 mm diameter chain cable of IACS (International Association of Classification Societies) Grade 3, with a holding load of 25 % of the breaking load of the chain cable.

3.3
anchor nominal weight
W_A
mass of a single anchor in kg

3.4
nominal size of chain stopper
NSCS
size expressed in terms of chain cable diameter in millimetres, grade of chain and holding load required at brake

EXAMPLE 100/3/85 is the size designation of a chain stopper for 100 mm diameter chain cable of IACS Grade 3, with a holding load of 85 % of breaking load of the chain cable.

3.5
equipment number
EN
factor anchor and chain sizes to be based on

Note 1 to entry: The EN is defined by classification society rules.

3.6
sloping angle
α
angle between the vertical axis and the line between lifter connecting the chain cable outlet to chain-locker

Note 1 to entry: See Figure 1.

3.7
winding angle
β
angle describing the circular arc on which the chain is engaged on the cable lifter, set between two lines originating from the windlass centre of rotational axis to a point perpendicular to the direction of the incoming and outgoing chain

Note 1 to entry: See Figure 1.

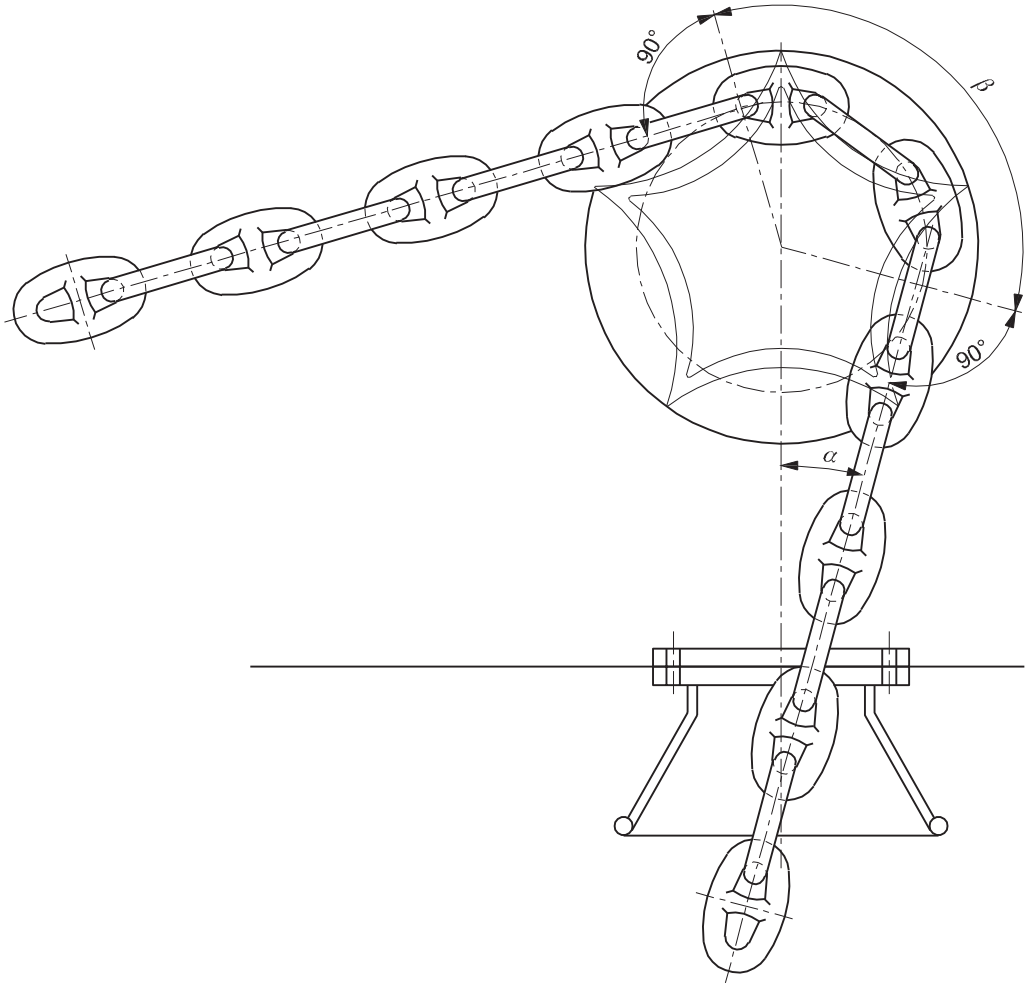


Figure 1 — Winding angle, β — Sloping angle, α

3.8
anchor chain
chain as specified by ISO 1704

Note 1 to entry: Studless chains can be used provided they are of equal strength to the stud link chain, as defined by equipment number.

3.9
free-wheeling condition
condition where a declutched cable lifter is able to rotate and release cable under action of anchor and/or chain weight

3.10
deviation angle of chain
γ
angle between the centre line of chain leaving cable lifter and a plane perpendicular to main axis of the windlass

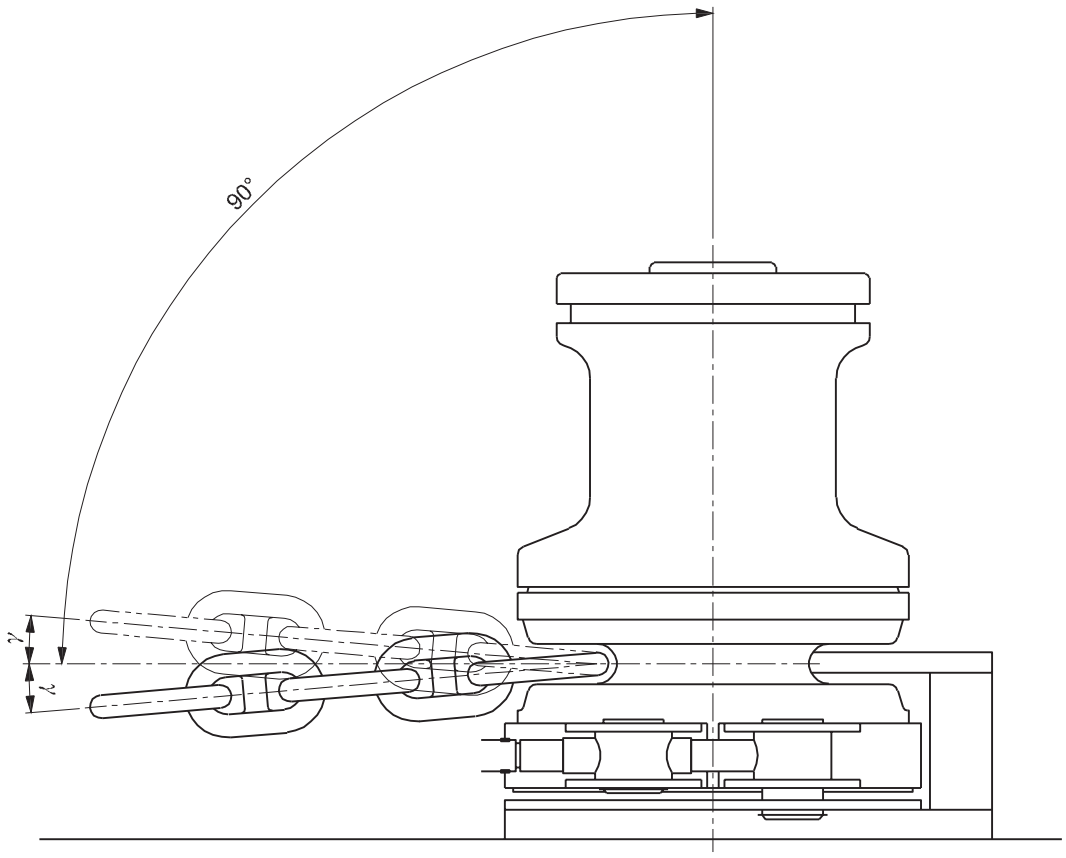


Figure 2 — Deviation angle of chain, *γ*

4 Design and construction

4.1 Cable-lifter

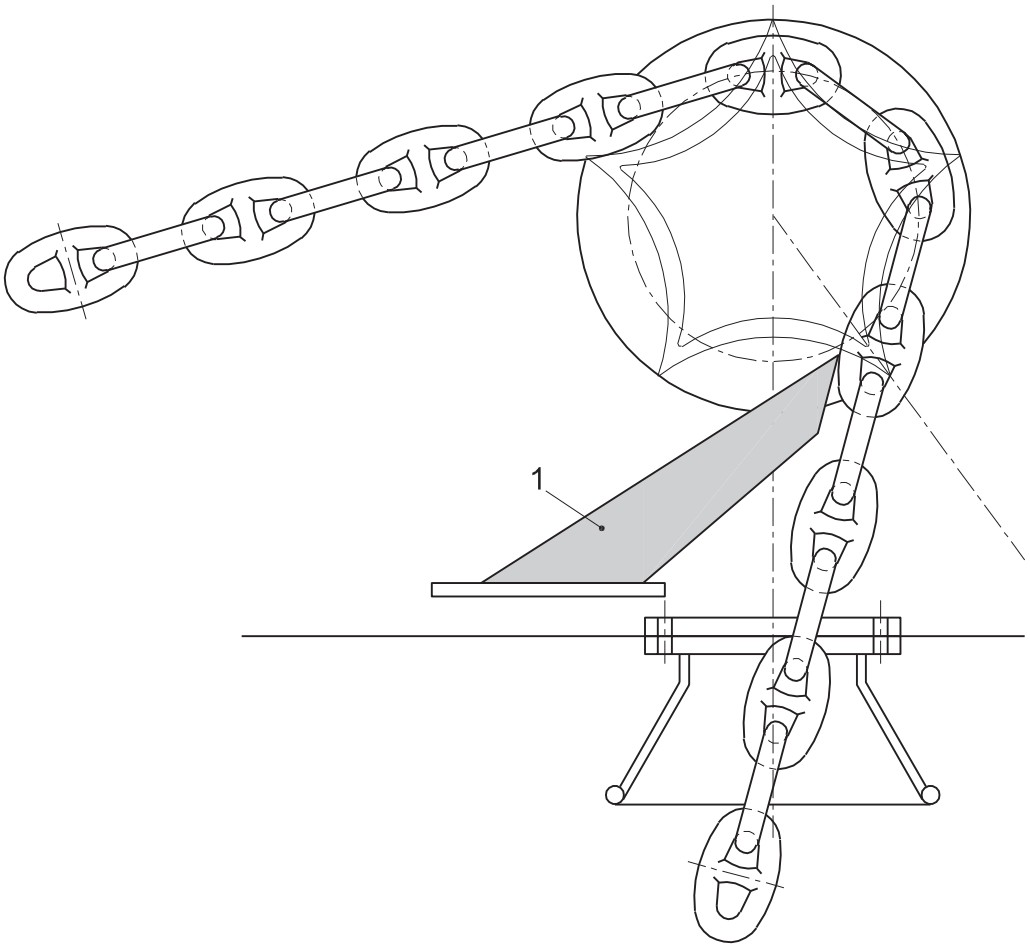
4.1.1 Snugs

The cable lifter shall have at least five snugs and shall be able to lower and retrieve the chain cable without slipping. A minimum of three snugs shall be engaged simultaneously during operation. The working conditions of the cable lifter are related to the number of snugs and the minimum winding angle, β_{min}, as specified by the windlass manufacturer in Clause 6.

NOTE As guidance, β_{min} shall be as large as possible and ideally close to 180°. Smaller angles of β_{min} should be reflected in a higher number of snugs and include agreeing, β_{min} between the yacht designer and the windlass manufacturer.

4.1.2 Windlass

The component manufacturer shall ensure that the windlass has the ability for safe chain separation when in operation.



Key

1 chain separator element

Figure 3 — Chain separator element

4.1.3 Brake holding loads

Where a chain stopper is not fitted, the windlass has to be designed to withstand 80 % of the cable breaking load.

Where a chain stopper is fitted, the windlass braking system shall have sufficient brake capacity to ensure safe stopping when paying out the anchor and chain.

4.1.4 Brake activating systems

Brake activating systems are the following:

— manual brake device;

— an automatic hydraulic or pneumatic brake including the below additional means of control;

— manually through levers;

— a backup energy source allowing three consecutive repetitions offline from main power.

4.2 Testing and performance

The manufacturer is responsible in determining applicable testing requirements of ISO 7825 and ISO 4568.

5 Remote control of windlass

An optional remote control station shall be provided with the following controlling, communications, and monitoring systems:

1) video monitoring the complete cable line (from hawse pipe to chain-locker);

2) video monitoring the cable lifter;

3) display anchor position showing amount of chain left/let-off and when anchor fully hauled/stowed;

4) controls for cable lifter clutch and brake;

5) public address (PA/Intercom) allowing two way control station ⇔ windlass communication (for operation and alert).

6 Installation instructions provided by the manufacturer

An installation/maintenance manual shall be provided including the following information and instructions:

— bolting;

— maximum sloping angle, α;

— minimum winding angle, β;

— maximum deviation angle of chain, γ;

— electric wiring and/or hydraulic diagrams;

— lifting/hoisting points and handling information;

— recommended bolt torque;

— assembly procedure;

— exploded diagram and list of parts;

— deck cut-out details (drawing);

— maximum permissible deviation angle of chain in accordance with the component manufacturers limits;

— required number of engaged snugs;

— maintenance instructions.

7 Labelling

A metallic label shall be permanently fixed with the following minimum information:

a) name and address of the manufacturer;

b) NS_W code;

c) number of snugs;

d) max sloping angle, α, and winding angle, β;

e) power installed/electrical source;

f) nominal value of continuous pulling force and speed (kN and rpm);

g) serial number.

The above items are relevant for installation of the windlass. If the manufacturer wants to provide user relevant information (e.g. max. anchorage depth), ISO 4568 can be consulted.

8 Chain stoppers

8.1 Installation

A chain stopper is normally installed for each chain cable between windlass and hawse pipe, at a suitable position not to obstruct free run of chain when the device is disengaged. It should be used to relieve the windlass of the pull of chain cable when the vessel is at anchor.

The deck where the chain stopper is mounted is to be suitably reinforced to withstand load defined in 8.3.

A chain stopper is to be installed at a suitable distance from the windlass to ensure good access and easy operation, as well as to avoid the chain falling to the deck when tension is relaxed.

Where the hawse pipe is installed under an angle from the vertical plane through chain centre, the chain stopper should be installed at a suitable angle to ensure the chain sits flat in it and it can be locked easily.

8.2 Design

Chain stopper is to be designed in a way to ensure that chain links are not deformed or damaged by the locking action of the stopper.

The design shall ensure that the device cannot be accidentally locked (engaged) while the chain cable runs through it, or that the chain cannot catch on any of its parts when moving through.

Chain tensioners or devil's claws can be installed, combined with a chain stopper or separately, to support the weight of anchor and keep it tight in anchor pocket. However, those are not to be considered chain stoppers and are not to be used as such when the vessel is at anchor.

Chain stopper can also incorporate a roller to lead the chain cable from deck into hawse pipe. Such rollers are to be suitably designed to avoid slipping of the chain sideways and to avoid any deformation of chain links, caused by tension in the chain.

8.3 Holding load

The chain stoppers are to be able to withstand 80 % of the minimum breaking strength of the chain cable without any permanent deformation of the stressed parts.

Fitting of a chain stopper is not compulsory. If a chain stopper is not fitted, the windlass is to fulfil the above holding load requirements.

NOTE The above are design specifications which do not require physical product testing to these loads.

Annex A
(normative)

Minimum information provided by the purchaser

The purchaser shall provide information on the following:

— chain grade and diameter;

— equipment number;

— if a chain stopper is intended to be installed:

  — sloping angle, α;

  — winding angle, β;

— nominal weight of anchor (W_A) and anchor chain;

— type of power available for windlasses.

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Price based on 8 pages

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